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10/034,205	01/03/2002	Melih Ogmen	00437-0006	7755

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BLAKE, CASSELS & GRAYDON LLP
BOX 25, COMMERCE COURT WEST
199 BAY STREET, SUITE 2800
TORONTO, ON M5L 1A9
CANADA

EXAMINER	
LEUNG, CHRISTINA Y	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/034,205	OGMEN ET AL.	
	Examiner	Art Unit	
	Christina Y. Leung	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 11* is/are rejected.

7)☒ Claim(s) *8,10 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on 23 September 2005. These drawings are acceptable.

Claim Objections

2. Claims 8, 10, and 12 are objected to because of the following informalities:

Claim 8 recites "said at least one laser comprising a laser for each mode" in lines 7-8 of the claim. Examiner respectfully notes that because the claim recites "at least three possible values" and "a mode corresponding to each of said possible values," the claim inherently includes at least three modes, and therefore, at least three lasers. Examiner respectfully suggests that instead of reciting "at least one laser" twice in line 7 and once in line 10 of the claim, the claim should be amended to recite "at least three lasers" in these places in the claim.

Claim 10 also currently recites "said at least one laser" in line 1 of the claim. Examiner respectfully suggests that this phrase should also be amended to "said at least three lasers."

Claim 12 recites "said laser" in line 9 of the claim, but recites "at least one laser" twice in lines 7 and 8. Examiner respectfully suggests that the terminology regarding the laser element is made consistent in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 11 recites a plurality of filters coupled to a laser and a plurality of electronic switches corresponding to the filters. However, claim 11 depends on claim 8, which has been amended to include the limitation "said at least one laser comprising a laser for each mode," and now inherently includes at least three lasers (see above discussion regarding the claim objection to claim 8), wherein each laser is powered corresponding to the respective mode. Examiner respectfully notes that Applicants' specification does not include an embodiment of their invention with at least three lasers powered corresponding to each mode *and* a plurality of switches and filters corresponding to each mode coupled to "said laser." For example, Applicants' Figure 4 shows an embodiment including a plurality of lasers, but no additional filters and switches, and Figure 6 shows an embodiment including one laser and filters and switches.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "said lasers" in line 9. There is insufficient antecedent basis for this limitation (multiple lasers) in the claim because the claim only previously recites a step of

"powering a laser corresponding to a respective mode." However, although the claim does inherently recite that there are a plurality of modes (because each mode corresponds to a respective one of "at least three possible values"), Examiner respectfully notes that the recited step of powering does not inherently necessitate multiple lasers because a single laser may be powered in different ways corresponding to the multiple modes. Applicants' own Figure 6 illustrates such an embodiment using a single laser.

Claims 2-7 depend on claim 1 and are therefore also rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shikada et al. (US 4,700,352 A) in view of Puc et al. (US 6,452,707 B1).

Regarding claim 1, as well as the claim may be understood with respect to 35 U.S.C. 112, discussed above, Shikada et al. disclose a method of transmitting data over a fiber-optic channel (Figure 1), the data comprising multi-valued bits each having one of at least three possible values, the method comprising:

a) establishing a respective optical characteristic corresponding to each of the possible values;

b) for each multi-valued bit of the data, transmitting a pulse having the optical characteristic corresponding to the value of the multi-valued bit (column 2, lines 12-50; column 3, lines 7-62; see also Figures 3 and 4A-C);

each pulse being transmitted by powering a laser (semiconductor laser 1 in Figure 1) corresponding to a respective mode, each mode corresponding to a respective one of the values, and the laser being powered by a laser driver (including pulse source 3) operating to power the laser corresponding to the respective mode.

Examiner respectfully notes that Shikada et al. disclose that pulses are transmitted by the laser, wherein the laser operates corresponding to a respective mode corresponding to one of the values. In other words, when the multi-valued data signal indicates a certain bit value, the laser is operated in a way to transmit that bit value.

Further regarding claim 1, as well as the claim may be understood with respect to 35 U.S.C. 112, discussed above, Shikada et al. do not specifically disclose multiple lasers, but it is well understood in the art that a system may include multiple, similarly-operating transmitters for transmitting signals to a plurality of locations in a communications network. It is also well known in the art that a plurality of similarly-operating transmitters may be used in a multiplexed system in order to transmit larger quantities of data; Puc et al. in particular teach providing a plurality of optical transmitters 120 for this purpose (Figure 2; column 4, lines 30-42). Puc et al. further teach that these optical transmitters may transmit multi-valued bits having at least three possible values such as the transmitter already disclosed by Shikada et al. (Puc et al., column 5, lines 1-24). It would have been obvious to a person of ordinary skill in the art to include multiple

lasers as suggested by Puc et al. in the system disclosed by Shikada et al. in order to transmit larger amounts of data across the communications channel.

Regarding claim 2, Shikada et al. disclose that the optical characteristic comprises wavelength (i.e., frequency; column 1, lines 49-50).

Regarding claim 3, Shikada et al. disclose that optical characteristic further comprises amplitude modification (column 3, lines 3-6).

9. Claims 1, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasturia et al. (US 5,299,047 A) in view of Puc et al.

Regarding claim 1, as well as the claim may be understood with respect to 35 U.S.C. 112, discussed above, Kasturia et al. disclose a method of transmitting data over a fiber-optic channel (Figure 2), the data comprising multi-valued bits each having one of at least three possible values, the method comprising:

a) establishing a respective optical characteristic corresponding to each of the possible values;

b) for each multi-valued bit of the data, transmitting a pulse having the optical characteristic corresponding to the value of the multi-valued bit (Figure 1; column 2, lines 27-55);

each pulse being transmitted by powering a laser 1 corresponding to a respective mode, each mode corresponding to a respective one of the values, and the laser being powered by a laser driver (including encoding means 7, modulator 3, and on/off switching means 5) operating to power the laser corresponding to the respective mode (column 2, lines 56-68; column 3, lines 1-42).

Examiner respectfully notes that Kasturia et al. disclose that pulses are transmitted by the laser, wherein the laser operates corresponding to a respective mode corresponding to one of the values. In other words, when the multi-valued data signal indicates a certain bit value, the laser is operated in a way to transmit that bit value.

Further regarding claim 1, as well as the claim may be understood with respect to 35 U.S.C. 112, discussed above, Kasturia et al. do not specifically disclose multiple lasers, but it is well understood in the art that a system may include multiple, similarly-operating transmitters for transmitting signals to a plurality of locations in a communications network. It is also well known in the art that a plurality of similarly-operating transmitters may be used in a multiplexed system in order to transmit larger quantities of data; Puc et al. in particular teach providing a plurality of optical transmitters 120 for this purpose (Figure 2; column 4, lines 30-42). Puc et al. further teach that these optical transmitters may transmit multi-valued bits having at least three possible values such as the transmitter already disclosed by Kasturia et al. (Puc et al., column 5, lines 1-24). It would have been obvious to a person of ordinary skill in the art to include multiple lasers as suggested by Puc et al. in the system disclosed by Kasturia et al. in order to transmit larger amounts of data across the communications channel.

Regarding claims 4 and 5, Kasturia et al. disclose that the optical characteristic comprises polarization and amplitude modification (Figure 1; column 2, lines 27-55).

10. Claims 1, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonenaga et al. (US 5,543,952 A) in view of Puc et al.

Regarding claim 1, as well as the claim may be understood with respect to 35 U.S.C. 112, discussed above, Yonenaga et al. disclose a method of transmitting data over a fiber-optic

channel (Figure 11A), the data comprising multi-valued bits each having one of at least three possible values, the method comprising:

a) establishing a respective optical characteristic corresponding to each of the possible values;

b) for each multi-valued bit of the data, transmitting a pulse having the optical characteristic corresponding to the value of the multi-valued bit (Figures 3 and 12A-F; column 9, lines 23-32);

each pulse being transmitted by powering a laser 76 corresponding to a respective mode, each mode corresponding to a respective one of the values, and the laser being powered by a laser driver (including encoding circuit 80 and modulators 31 and 32) operating to power the laser corresponding to the respective mode (column 8, lines 60-67; column 9, lines 1-18).

Examiner respectfully notes that Yonenaga et al. disclose that pulses are transmitted by the laser, wherein the laser operates corresponding to a respective mode corresponding to one of the values. In other words, when the multi-valued data signal indicates a certain bit value, the laser is operated in a way to transmit that bit value.

Further regarding claim 1, as well as the claim may be understood with respect to 35 U.S.C. 112, discussed above, Yonenaga et al. do not specifically disclose multiple lasers, but it is well understood in the art that a system may include multiple, similarly-operating transmitters for transmitting signals to a plurality of locations in a communications network. It is also well known in the art that a plurality of similarly-operating transmitters may be used in a multiplexed system in order to transmit larger quantities of data; Puc et al. in particular teach providing a plurality of optical transmitters 120 for this purpose (Figure 2; column 4, lines 30-42). Puc et al.

further teach that these optical transmitters may transmit multi-valued bits having at least three possible values such as the transmitter already disclosed by Yonenaga et al. (Puc et al., column 5, lines 1-24). It would have been obvious to a person of ordinary skill in the art to include multiple lasers as suggested by Puc et al. in the system disclosed by Yonenaga et al. in order to transmit larger amounts of data across the communications channel.

Regarding claims 6 and 7, Yonenaga et al. disclose that the optical characteristic comprises phase angle and amplitude modification (Figures 3 and 12A-F; column 9, lines 23-32).

Allowable Subject Matter

11. Claims 8, 10, and 12 would be allowable if rewritten to overcome the claim objections discussed above.

12. Reasons for the indication of allowable subject matter were presented in the previous Office Action.

Response to Arguments

13. Applicants' arguments filed 23 September 2005 with respect to claims 1-7 in particular have been considered but are moot in view of the new ground(s) of rejection.

Examiner respectfully notes that claims 1-7 do not specifically recite the structures recited in claims 8 or 12.

Examiner also respectfully notes that although claim 12 contains allowable subject matter, claim 11 (which contains some similar limitations as claim 12) is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement as discussed above, and is not allowed.

Conclusion

14. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Y Leung
Christina Y Leung
Patent Examiner
Art Unit 2633